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REMARKS:

Applicant appreciates the time and care the examiner has taken in examining the application.

In the amendments, claim 1 has been amended to incorporate the features of claims 2 and 3, which have been cancelled. Claims 18-20 accordingly have been cancelled. For the sake of brevity, remarks in the first Response to Office Action are incorporated by reference.

The invention set forth in amended claim 1 insures that the liquid jet is finely dispersed by the gas jet to form a uniform gas-liquid mixture that is precisely directed to the cutting tools of the cutter head. Locating the crossing point of the axes of the nozzles at a distance of less than 100 mm from the outlet opening of the gas nozzle results in having the liquid jet meet with the gas jet very close to the outlet of the latter, so that very fine spraying can occur because of the high air speed and the thus particularly high shearing forces to be observed at a distance of less than 100 mm from the nozzle outlet opening of the gas nozzle.

Neither DE 19951848 Al nor Shope discloses the claimed location of the crossing point of the axes of the nozzles. The crossing point disclosed in DE 19951848 Al is certainly located at a distance of much more than 100 mm from the outlet opening of the gas nozzle, which is due to the very small angle of approximately 12-13° between the axis of the gas jet and the axis of the liquid jet, as shown in Fig. 2. (Please see attached Exhibit, an annotated Fig. 2 of DE 19951848 Al, showing angle b of approximately 12-13°). Shope does not disclose any specific location of the crossing point of the axes of the nozzles at all. The water and air mist produced by the water and air nozzles of Shope is not precisely oriented to any specific point, but

rather, is broadly dispersed towards a cutting blade which is arranged in the vicinity of the nozzle outlet opening. Shope does not disclose any specific orienting means for orienting the water and air mist to the desired location.

In contrast thereto, the instant invention provides for a specific configuration that creates a well-defined jet consisting of gas and very small liquid particles dispersed therein, which defined jet is clearly and precisely directed to cutting tools that are located at a distance of at least 1 meter from the outlet opening of the nozzles. In order to create such a specifically directed spraying jet consisting of air and fine liquid particles dispersed therein, it is required according to claim 1 to locate a crossing point of the axes of the nozzles of a nozzle pair at a distance of less than 100 mm from the outlet opening of the gas nozzle. This embodiment ensures that all the liquid ejected by the respective nozzle is taken up into the gas jet. Due to the crossing point of the nozzle axes being located as near as less than 100 mm from the outlet opening of the gas nozzle, the contact between the gas jet and the liquid jet is at a point where the gas jet still has a high velocity and accordingly high energy, which ensures that the liquid jet is totally deflected and torn apart into very small liquid particles that will be entrained by the gas jet in a specifically directed way towards the cutting tool to be cooled.

According to the features of original claim 3 of the instant application, now presented as part of claim 1, the outlet angles of the liquid nozzles amount to between 5 and 10 degrees. This construction of the outlet angles is also decisive for obtaining a liquid-gas jet where all of the ejected liquid is taken up and entrained by the gas stream. There is no indication in Shope to have the claimed outlet angles. Regarding the outlet angles from claim 3, the examiner states that Slowik teaches that outlet angles are largely matters of engineering design. It is respectfully submitted that the outlet angles according to the claim 3 features are, in fact, not a mere matter of engineering design, because Slowik et al do not teach the advantages connected with the specific angles as claimed. The claimed angles of between 5 and 10 degrees have been found to be of a specific advantage specifically in connection with the inventive orientation of the axes of the

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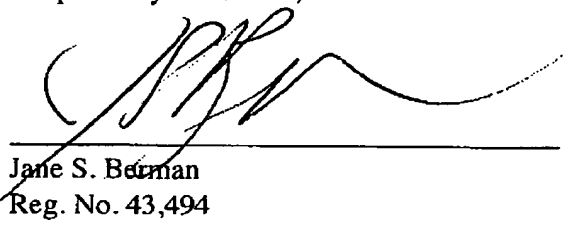
nozzles forming an angle with each other of between 45 and 135 degrees and in connection with the specific location of the crossing point of the axes as claimed. There is no indication in DE 19951848, in Shope and in Slowik to select outlets' angles of liquid nozzles as set forth in these features from claim 3. A person skilled in the art would not find any indication in these references directing him to the specific advantages that the claimed outlet angles have in connection with the inventive device for producing a gas-liquid mixture and for the specific aim of directing such gas-liquid mixture towards cutting tools.

It is respectfully submitted that the application is in condition for prompt allowance and that all of the objections, rejections and requirements raised in the Office action have been met. Early, favorable treatment of this application is requested.

Extension Request and Fee Authorization. The Commissioner is hereby authorized to charge any fees associated with this communication, including any necessary fees under 37 CFR § 1.17(a) for any necessary extensions of time under 37 CFR §1.136(a), which are hereby requested, to our Deposit Account No. 50-0305. The Examiner is encouraged to call Robert J. Schneider at the direct number (312) 845-3919 with any questions that arise in connection with this application, or to resolve any remaining issues.

Respectfully submitted,



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CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 C.F.R. § 1.8

Attorney Docket Number:	1716448
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I hereby certify that the attached correspondence, namely: Response to Final Office Action, was transmitted by facsimile on the date listed above, to the U.S. Patent Office at the facsimile number listed above, under 37 C.F.R. § 1.8.

Signature: Brenda A. Walton

Typed Name of Person Signing this Certificate: Brenda A. Walton

Date of Signature: September 29, 2006